

Notice of Allowability

Application No.

10/005,244

Examiner

Kevin M. Bernatz

Applicant(s)

WELLER ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to interview of 9/23/05.
2. ☒ The allowed claim(s) is/are 13-19 and 27-34.
3. ☒ The drawings filed on 03 December 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 9/27/05.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Brian Opelko on September 23, 2005.

The application has been amended as follows:

- The specification has been amended as follows: the first full paragraph on page 10 of the application has been amended to read as follows:

Additionally, while the present invention has been described herein as using iron-platinum (FePt) nanoparticles, other high anisotropy materials having appropriate L1₀ phase characteristics may be utilized without departing from the spirit and scope of the present invention. Such high anisotropy L1₀ phased materials include, but are not limited to, CoPt, FePd, MnAl, etc. So that the nanoparticles may self-assemble in the locking pattern, it is contemplated herein that the nanoparticles deposited in the locking pattern be of a single magnetic species. For example, the deposited nanoparticles should be either all FePt particles, all CoPt particles, all FePd particles, all MnAl particles, etc.

- Claims 1 – 12 and 20 – 26 were cancelled;

- Claim 13, lines 8 – 9: the phrase “wherein the locking pattern ... plurality of nanoparticles” was replaced with the phrase: “said plurality of nanoparticles consisting of a single magnetic species”;
- Claim 27, lines 7 – 8: the phrase “wherein the locking pattern ... plurality of nanoparticles” was replaced with the phrase: “said plurality of nanoparticles consisting of a single magnetic species”;
- New claim 33 was added, reciting the language as follows:

33. The magnetic recording disc of claim 13, wherein the locking pattern is formed in accordance with a self-assembly-coherence length scale of the plurality of nanoparticles.

- New claim 34 was added, reciting the language as follows:

34. The magnetic recording medium of claim 27, wherein the locking pattern is formed in accordance with a self-assembly-coherence length scale of the plurality of nanoparticles.

Reasons for Allowance

3. The present claims are deemed allowable over the references of record since the references of record fail to disclose or render obvious a magnetic recording medium/disc possessing a plurality of pits, each of which are filled with a plurality of nanoparticles meeting the claimed limitations.

While the prior art of record disclose patterned magnetic recording media possessing a plurality of pits filled with individual particles or a plurality of pits filled with

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a mixture of soft and hard magnetic species, the prior art of record fails to disclose or render obvious a structure wherein the plurality of pits comprise a plurality of nanoparticles completely filling the plurality of pits and exhibiting short-range order characteristics, wherein each individual pit includes a plurality of nanoparticles therein, said plurality of nanoparticles consisting of a single magnetic specie.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

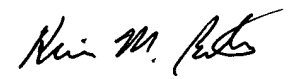
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB
September 26, 2005


Kevin M. Bernatz, PhD
Primary Examiner